

HESPEROPERLA HOGUEI, A NEW SPECIES OF STONEFLY  
FROM CALIFORNIA (PLECOPTERA: PERLIDAE)

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ABSTRACT.— A new species of *Hesperoperla* is named from northern California. The adult male and female, nymph, and egg are described and figured. *Hesperoperla hoguei* adds a second species to this previously monotypic genus.

The genus *Hesperoperla* Banks (1938) was not accepted by other workers until the recent world catalog (Illies 1966). Studies by Needham and Claassen (1922), Claassen (1940), and Frison (1942) placed six species in synonymy under *Acroneuria pacifica* Banks, including *Hesperoperla obscura* (Banks), the designated type species.

Stark and Gaufin (1976), in their revision of the Perlidae, confirmed that *Hesperoperla* was indeed a separate genus with one valid species, *Hesperoperla pacifica* (Banks).

In the fall of 1976, Charles L. Hogue of the Natural History Museum, Los Angeles County, sent a distinctive female perlid to the senior author for identification. When it proved to belong to *Hesperoperla*, the help of numerous colleagues, including Bill P. Stark, was enlisted.

The types of several species in the *A. pacifica* synonymy were examined, including: *A. pacifica* Banks, *A. nigrita* Banks, *A. pumila* Banks, and *A. obscura* Banks. The specific name *nigrita* suggested that its type might be dark and distinctive, but this was not the case. The type locality of *A. pumila*, Three Rivers, California, which is near Visalia, is a short distance south of the known range of this new species, but the specimen was positively *H. pacifica*.

Several additional specimens were subsequently found that confirmed that this was an undescribed species of *Hesperoperla* with a known range that included most of northern California.

Both species of *Hesperoperla* occur in the same streams with no intergradation; thus they are sympatric species.

*Hesperoperla hoguei*, n. sp.

Figs. 1-9

MALE.— Macropterous. Length of forewings 18-20 mm; length of body 16-18 mm. Dorsum of head mostly yellow, with brown U-shaped pattern connecting ocelli, posterior lateral margins brown behind compound eyes, sometimes with faint brown area near frontal margin. Pronotum with broad yellow median stripe, lateral margins dark brown, rugosities distinctive and slightly lighter than lateral margins (Fig. 4). Legs brown. Wings light brown, veins brown. Abdomen yellow with narrow brown lateral stripes. Tergum 10 with median tergite, segment covered with medium-length hairs. Sternum 9 with large quadrangular hammer. Paraprocts sclerotized, broad basally, apex narrow and pointed (Fig. 2). Aedeagus with two bands of large spinules, apical band broad, consisting of 12 or more closely set spinule rows, basal band narrow, interrupted on both dorsomesal and ventromesal surfaces; small spinules present in patches near base and at dorsal apex (Figs. 5-6).

FEMALE.— Macropterous. Length of forewings 26-28 mm; length of body 24-26 mm. Color pattern similar to male. Subgenital plate strongly produced, with more darkly sclerotized area along mesoposterior margin

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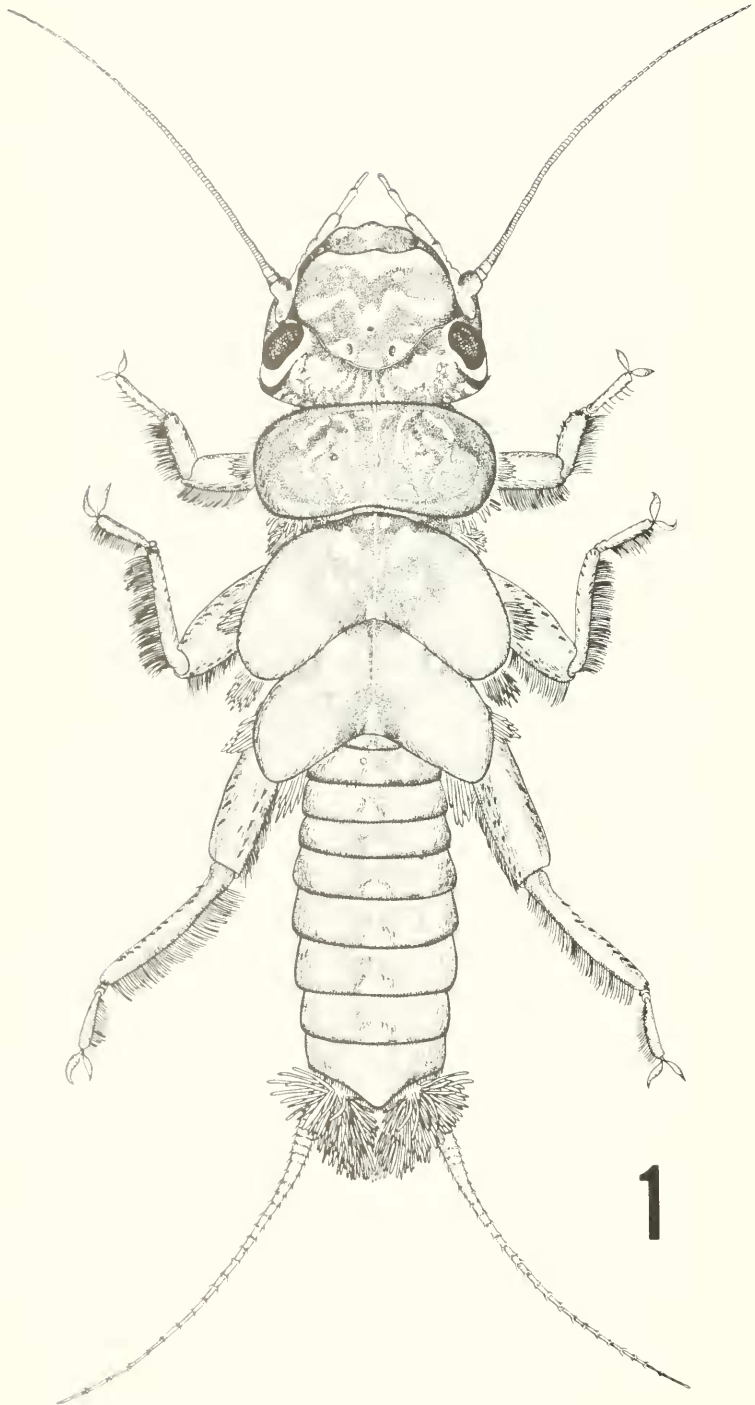
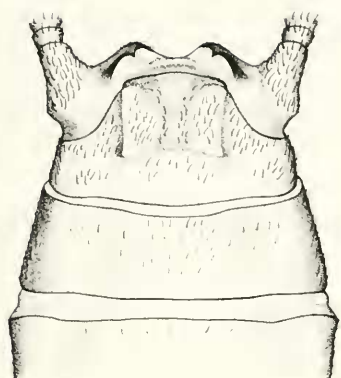
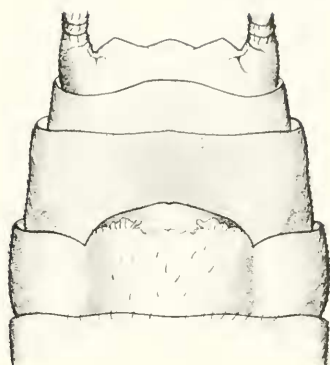


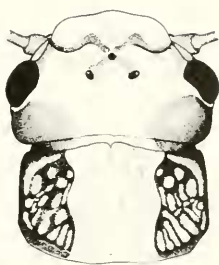
Fig. 1. *Hesperoperla hoguei*, mature nymph, habitus.



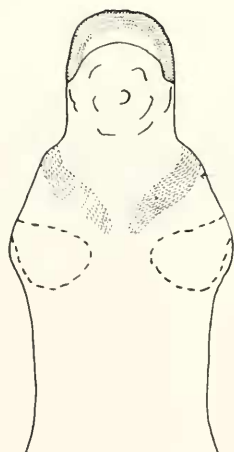
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Figs. 2-6. *Hesperoperla hoguci*: (2) male terminalia, dorsal; (3) female terminalia, ventral; (4) adult, head and pronotum; (5) aedeagus, dorsal (50X, inset 100X); (6) aedeagus, lateral (50X, inset 100X).

(Fig. 3). Vagina, spermathecum, and accessory glands membranous.

EGG.—Outline oval; cross-section circular. Collar stalked, margin flanged and irregularly incised; collar end of egg with regular indentations which end at terminal margin. Chorion smooth. Micropyles arranged circumlinearly in apical end opposite of collar (Figs. 7-9).

NYMPH.—General color dark brown, patterned with yellow markings. Occiput with an irregularly spaced row of spinules. Post-ocular fringe present. Head mostly dark, with distinctive inverted yellow W-shaped pattern located anterior to compound eyes, frontal margin entirely yellow. Pronotum with lateral setae sparse or absent. Abdominal terga with numerous small intercalary spinules. Cerci with fringe of spines at segmental joints, never longer than segments; few tiny intersegmental spinules present. Proventriculus with teeth in 12 longitudinal bands; accessory bands and structures absent. Thoracic and anal gills present (Fig. 1).

DIAGNOSIS.—*Hesperoperla hoguei* can be easily separated from *H. pacifica* in the nymphal stage by the difference in head pattern and the abdominal spinulation. *Hesperoperla pacifica* exhibits a large, inverted, mushroom-shaped pattern anterior to the compound eyes that terminates in an enlarged base on the mesoanterior margin, and *H. hoguei* bears an inverted W-shaped pattern and a separate broad yellow band running the full width of

the anterior margin. Intercalary spinules are entirely absent from the abdominal terga of mature *H. pacifica* nymphs but are numerous in *H. hoguei* specimens. *Claassenia sabulosa* nymphs also have an inverted W-shaped pattern on the head, but they possess a complete occipital ridge.

Adults of *H. pacifica* have a plain yellow brown pattern on their head and pronotum. Those of *H. hoguei* have a broad yellow median area set off by distinctive dark lateral margins. The external genitalia are quite similar, but the basal spinule band on the aedeagus of the males is different. In *H. pacifica* the band is only broken ventrally, but in *H. hoguei* the band is broken both dorsally and ventrally.

TYPES.—*Holotype*: ♂, Gibson Creek, 800 ft, 1 mile west of Ukiah, Mendocino Co., California, 6-IX-1976, C. L. Hogue. *Allotype*: Toadtown, 3000 ft, 4 miles SW Stirling City, Butte Co., California, 9-IX-1976, C. L. Hogue.

*Paratypes*: *Butte Co.*: Paradise, 25-V-1966, Lowe, 2 females (CSUC); *Tehama Co.*: Big Chico Creek, Hwy. 32, 14-IX-1979, G. L. Boles, 13 males, 7 females (GLB) (BYU). Additional specimens: *Butte Co.*: Big Chico Creek, 580 ft, ¼ mile below Salt Springs, Bidwell Park, ?-VIII-1972, M. W. Kainu, nymph (UCD); 2 miles SW Stirling City, 20-VI-1979, J. A. Stanger, nymphs (BYU). *Plumas Co.*: Sulphur Creek, Hwy. 89, 5-VII-1979, B. P. Stark and K. W. Stewart, nymphs



Figs. 7-9. *Hesperoperla hoguei*: (7) egg, lateral (200X); (8) egg, collar end (400X); (9) egg, micropyles (700X).

(BPS). *Shasta Co.*: unnamed spring tributary to Lake Britton, 20-IX-1978, G. L. Boles, nymphs (GLB); South Fork Bear Creek, 12-VII-1979, G. L. Boles, nymphs (GLB). *Tehama Co.*: Big Chico Creek, Hwy. 32, 14-V-1978, G. L. Boles, nymph (BYU); same data, 2-IX-1978, nymphs (2 females emerged 28-IX-1978) (GLB) (BYU).

Holotype and allotype deposited at the Natural History Museum, Los Angeles County.

ETYMOLOGY.— This species is named in honor of Dr. Charles L. Hogue, Senior Curator of Entomology, Natural History Museum, Los Angeles County. He has collected many interesting stoneflies during his studies on the torrenticolus insects of the New World.

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The drawings were made by Connie A. Bevan Bhagat.

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